

examples of lamps, and all of these have operating voltages in a range extending from 150 to 245 Volts. The need for this operating voltage range for the lamps of the Keijser reference is clearly explained in that reference as being needed because a sufficiently high pressure of mercury is necessary in the discharge vessel of those lamps to give them the proper color rendition, and so the lamp operating voltage must therefore be sufficiently high to accommodate that mercury pressure.

This operating voltage range for the Keijser reference lamps is in direct contrast to the lamps of the present invention for which the lamp voltage is to be kept below 110 Volts for lamp operational safety. That is because this limit results in keeping the wall temperatures of the lamps discharge chambers sufficiently low to avoid cracking of those chamber walls. Such a low operating voltage must then be accommodated through limiting the amount of mercury provided in the discharge chambers formed by those walls (and so keeping a sufficiently low pressure thereof) while still providing lamps with satisfactory operating characteristics including color rendition.

This clear limitation of the Keijser reference, requiring the operating the lamps disclosed therein with operating voltages above 110 Volts, is sought to be avoided by the Examiner through combining the Rothwell reference lamp disclosure with the Keijser reference lamp. This combination is made by the Examiner through determining a lamp operating voltage for the Keijser reference lamp based on (a) a lamp electrode separation of 0.8 cm in the lamp discharge chamber, as disclosed in that reference, and then (b) using a lamp parameter set out in the Rothwell reference for the lamps disclosed therein stating that such lamps have a maximum per unit separation distance lamp operating voltage of 70 Volts per centimeter of electrode separation. The Examiner multiplies these last two numbers to conclude that these two references together thus disclose that a 56 Volt discharge between the electrodes in a Keijser reference lamp is suitable to thereby come within the voltage parameter of present claim 1 requiring a lamp operating voltage of less than 110 Volts.

However, neon discharge lamps are a much different kind of lamp from the metal halide lamps of the present invention and of the Keijser reference. This is easily seen by noting that the Rothwell reference also sets out, near the statement of the first parameter therein, another lamp parameter for the lamps disclosed therein in stating those lamps also have a maximum per unit

separation distance lamp operating current of 5 mA per centimeter of electrode separation. The Keijser reference lamp relied on by the Examiner, in which there is an electrode separation of 0.8 centimeters, through multiplying these last two numbers yields a maximum lamp operating current of 4 mA. Using this value for the lamp maximum operating current, along with the maximum lamp operating voltage of 56 Volts calculated by the Examiner, as set out above, yields a lamp power dissipation of less than one-fourth of a Watt, a value leading to an emitted optical power that is likely to be found to provide a very feeble light indeed.

Clearly, such a low value of lamp power dissipation will provide very inadequate lighting for almost any activity and so, as one would then expect, the Rothwell lamps based on these electrode separation length parameters are going to be of rather substantial length to thereby obtain electrode separations sufficient to obtain much greater emitted optical power. Thus, in column 5 of the Rothwell reference, the lamp total operating voltage range is indicated to be from 1,000 to 10,000 Volts, or higher, along with total operating currents in the range from 20 mA to 1 Amp. This voltage range clearly exceeds what the Keijser reference states to be the maximum operating voltage of its lamps of 400 Volts.

There are further significant differences between the neon discharge lamps of the Rothwell reference and the metal halide lamps of the Keijser reference which prevents any significant combining of the teachings of the one with the other. The Rothwell reference describes a very specific high frequency, low duty cycle pulse generator being needed to operate its lamps, and for which no similar counterpart is described for the lamps in the Keijser reference. The discharges in the Rothwell reference lamps tubular envelopes must not only generate visible light, but also ultraviolet light in sufficient intensities to excite phosphors coating the inside of that envelope, and any coatings on the interior of the Keijser reference lamps discharge vessels will have unknown effects on the desired white light for interior lighting emitted from such discharge vessels assuming those phosphors could withstand the operating temperatures reached inside during use of the lamps. Finally, the Rothwell reference describes that the preferred gas fills of the lamps tubular envelopes be substantially pure neon without any indication of use of mercury or metal halides therein. In fact,

the results of any such introduction of mercury or metal halides into the neon gas lamp, or vice versa, are unpredictable based on what is disclosed in these two references.

In these circumstances, there just is no basis for combining anything in connection with the Rothwell reference lamps to any aspect of the Keijser reference lamps. As a result, the applicants respectfully submit that claim 1 is clearly allowable over the Keijser and Rothwell references, whether taken individually or in combination, and that the remaining claims depending on claim 1 should therefore also be allowable.

The foregoing shortcomings of combining the Keijser and Rothwell reference lamps, or teachings thereabout, also applies to present independent claim 9, a claim again containing the requirement of operating lamps of the present invention with a voltage that is less than 110 Volts. Thus, like claim 1, this claim therefore is also clearly allowable over the Keijser and Rothwell references, whether taken individually or in combination, and so also then are the claims dependent on claim 9.

The Commissioner is authorized to charge any additional fees associated with this paper or credit any overpayment to Deposit Account 11-0982. A duplicate copy of this communication is enclosed.

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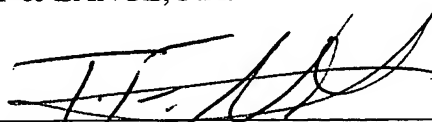
Respectfully submitted,

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